ABSTRACT

Methods, apparatus, and computer programs for investigating and characterising side effects of a treatment having an intended or on-target effect on cells are described. The method can include identifying a group of on-target cellular features of the plurality of cells which are affected by the treatment and are related to the on-target effect. A group of off-target cellular features can also be identified which are different to the on-target cellular features and which are also affected by the treatment and which are related to the side effect. A measure of the side effect based on the off-target cellular features can be obtained. The treatment can then be characterised based on the measure of the side effect. A further method involves capturing an image of the population of treated cells and deriving cellular features from the image. An on-target effect signature, which is characteristic of the on-target effect is created from cellular features relating to cellular properties involved in the intended effect. A side effect signature, which is characteristic of a side effect to the on-target effect, is created using cellular features relating to cellular properties not involved in the intended effect. On-target effect and/or side effect metrics are obtained from the signatures which can be used to characterise the treatment.